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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/856,717	02/19/2002	Kenj Asano	0203-0162P	3321
2292	7590	03/14/2007	EXAMINER	
BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			TATE, CHRISTOPHER ROBIN	
			ART UNIT	PAPER NUMBER
			1655	

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	03/14/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 03/14/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/856,717	ASANO ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Christopher R. Tate	1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 17 January 2007.
- 2a) This action is **FINAL**.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 24-30,32 and 34-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 24-30, 32, and 34-38 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 January 2007 has been entered.

Claims 24-30, 32, and 34-38 are presented for examination on the merits.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 24, 25, and 35-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Sugano et al. (US 4,461,760).

A method of treating a tumor via administering to a subject in need thereof an extract of *Lentinus edodes* mycelium (LEM), whereby the extract is prepared by crushing and delignifying a solid medium containing bagasse, rice bran, and LEM in the presence of water and one or more enzymes selected from cellulase, protease, and glucosidase to prepare a suspension, and raising the temperature of the suspension to inactivate the enzymes is claimed, whereby the LEM extract enhances  $\gamma\delta$ T cell activity is claimed, as well as the general concept of activating  $\gamma\delta$ T *in vivo* via administering such an LEM extract to an animal.

Sugano et al. teach an anticancer/antitumor composition comprising an LEM extract prepared via the same or essentially the same steps as those instantly claimed which was orally administered via injection to rats (in solution form, whereby LEM powder was dissolved in 0.9% salt water - please note that such a solution would be suitable for oral administration as instantly claimed) having chemically induced tumors, whereby the LEM increased the survival rate of the rats as well as reduced their tumor growth rate (see entire document including, e.g., col 2, line 48 - col 3, line 15, *per se*; col 4, line 44 - col 5, line 68; Figures 2-3, and Tables 4-5: with respect to the preparation and *in vivo* use of LEM, *per se*). Please note that although not expressly taught, other recited claim limitations (e.g., the instantly claimed underlying functional effect - enhancing  $\gamma\delta$ T cell activity, and/or that the extract comprises approximate amount ranges of various ingredients therein) would be inherent to the LEM extract taught by Sugano et al.

Therefore, the reference is deemed to anticipate the instant claims above.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-27, 30, 32, 34, and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaoka (US 6,090,615) and Nagaoka (US 2004/0038330 - which has an effective filing date of June 9, 1994), in view of Iizuka (US 4,629,627).

The US '615 reference teaches a *Lentinus edodes* (also known as shiitake mushroom) mycelium (hyphae) extract which is prepared via the same (or essentially the same) steps as instantly claimed, as well as pharmaceutical, drink, oral (food) formulations thereof, and a method of treating tumors therewith (see, e.g., col 1, lines 30-44; col 2, lines 25-63; col 3, lines 6-68; and Example 1, Comparative Examples 1 and 2, Example 4, Comparative Examples 3-4). The US '615 reference also expressly teaches that the extract composition shows excellent antitumor effects and has high levels of bioactive immune imparting cytokinin-like substances (especially including extract preparations prepared by either of the first two methods disclosed within US '615 - which do not require, or do not necessarily require, the presence of *B*-1,3-glucanase therein); and further that not only can the enzyme *B*-1-3-glucanase be used but also enzymes derived from the mycelium in preparing an extract with anti-tumor activity (see, e.g., Abstract; col 4, lines 41-45; col 8, lines 44-51; col 10, lines 24-47).

In addition, the US '330 reference teaches a *Lentinus edodes* mycelium extract, prepared via the same (or essentially the same) steps as instantly claimed, which is useful against viral hepatitis B, HIV, and liver cancer (see, e.g., paragraphs [0013] and [0016], and claim 5) and can be administered orally or by injection (see, e.g., paragraph [0029]). Please note that a subject with liver cancer (as disclosed by the US '330 reference) reasonably reads upon a subject in need thereof with respect to treating a tumor in a subject in need thereof (i.e., whether the liver cancer is caused by a viral infection or not it is still liver cancer which is readily understood in the medical art as reading upon a subject having a tumor or tumorous growth within the liver).

Neither of the above references expressly teaches treating viral infections other than hepatitis B and HIV with such a *Lentinus edodes* mycelium extract.

Iizuka beneficially teaches producing an antiviral and anti-tumor (including against liver cancer and other tumors within rats and mice) *Lentinus edodes* mycelium extract having cytokinin activity which is initially prepared via the same (or essentially the same) steps as instantly claimed, prior to additional isolation/purification steps. Iizuka further discloses that their cytokinin-containing extract preparation is useful against various types of viruses including against herpes virus infections (see entire document including col 3, line 1 - col 5, line 51).

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to prepare a therapeutic anti-tumor/anti-cancer *Lentinus edodes* (shiitake) mycelium extract via the instantly claimed steps, including formulating such therapeutic extracts into conventional pharmaceutical, drink, and/or oral (e.g., food) preparations, as well as to treat liver cancer and/or other tumors therewith, based upon the beneficial teachings provided by the cited Nagaoka references with respect to such anti-tumor/anti-cancer activity. It would also have been obvious to one of ordinary skill in the art to treat other viral infections (as well as tumors) with a *Lentinus edodes* mycelium extract disclosed by the Nagaoka references, especially since the US '615 reference expressly teaches that such an LEM extract contains high levels of cytokinin-like substances and Iizuka beneficially discloses that cytokinin substances within *Lentinus edodes* mycelium extract preparations are bioactive substances therein which provide effective therapeutic activity against viral infections (as well as tumors). Please note, if not expressly taught, the other claim limitations (e.g., that the extract has a particular functional cell activity and/or that it comprises approximate ranges of various ingredients therein) would be intrinsic to the *Lentinus edodes* mycelium extracts reasonably taught and/or suggested by the cited references. The result-effective adjustment in conventional working conditions/parameters

Art Unit: 1655

(e.g., providing such an extract within one or more conventional pharmaceutical formulations such as those instantly claimed) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan having the cited references as a guide. Please note that although not expressly taught, other recited claim limitations (e.g., the instantly claimed underlying functional effect - enhancing  $\gamma\delta T$  cell activity, and/or that the extract comprises approximate amount ranges of various ingredients therein) would be intrinsic to the *Lentinus edodes* mycelium extracts reasonably taught and/or suggested by the cited Nagaoka references

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Applicants' arguments (presented within the response filed 13 December 2006) as they pertain to the art rejection immediately above have been carefully considered but are not deemed to be persuasive of error in the rejection.

Applicants continue to argue that the Nagaoka US '615 reference has been misinterpreted by the examiner with respect to the recitation therein: "their *Lentinus edodes* (shitake) mycelium extract is effective as an anti-tumor agent ...". That is, this section (col 1, lines 30-44) of the reference that the Examiner relies upon in US '615 refers to the prior art preparation not the preparation of the Nagaoka '615 inventors. However, outside of this passage, this reference

clearly and repeatedly teaches that the US '615 *Lentinus edodes* mycelium extract preparation shows excellent and effective anti-tumor activity (see, e.g., Abstract; col 4, lines 41-45; col 8, lines 44-51; col 10, lines 24-47). Applicant further argues that '615 preferably uses *B*-1,3-glucanase, as an enzyme within their preparatory steps. However, as noted above, the US '615 reference also expressly teaches that the extract composition shows excellent antitumor effects and has high levels of bioactive immune imparting cytokinin-like substances - especially including extract preparations prepared by either of the first two methods disclosed within US '615 - which do not require, or do not necessarily require, the presence of *B*-1,3-glucanase therein); and further teaches that not only can the enzyme *B*-1-3-glucanase be used but also enzymes derived from the mycelium in preparing an extract with anti-tumor activity (again see, e.g., Abstract; col 4, lines 41-45; col 8, lines 44-51; col 10, lines 24-47). Applicants also argue that US '330 only discloses treating liver cancer as a viral disease based upon claim 5 therein. However, US '330 also teaches that the extract can be used to treat liver cancer at paragraphs [0013] and [0016]. With respect to the teaching of US '330, as discussed in the art rejection above, this reference teaches a *Lentinus edodes* mycelium extract, prepared via the same (or essentially the same) steps as instantly claimed, is useful against liver cancer (see, e.g., paragraphs [0013] and [0016], and claim 5) - in addition, please refer to the teachings of Iizuka (US 4,629,627) - newly cited above, with respect to liver cancer reasonably reading upon a tumorous cancer. Accordingly, the cited Nagaoka references teach (or at least reasonably suggest) that their *Lentinus edodes* mycelium extract preparations have anti-tumor activity.

Claims 26-29 and 38 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nagaoka (US 2004/0038330 - which has an effective filing date of June 9, 1994) in view of Nagaoka (JP 61103816 - JPAB and DWPI Abstracts).

The first Nagaoka reference (US '330) teaches a *Lentinus edodes* mycelium extract, prepared via the same (or essentially the same) steps as instantly claimed (as well as via the same essential steps as JP '816 below) which is useful against viral hepatitis B, HIV, and liver cancer (see, e.g., paragraph [0013] and claim 5) and can be administered orally or by injection (see, e.g., paragraph [0029]). This reference does not teach utilizing such an extract preparation to treat bacterial infections.

The second Nagaoka reference (JP '816) beneficially teaches a *Lentinus edodes* (also known as shiitake mushroom) mycelium extract having antibacterial (antibiotic) activity (thus, useful for treating bacterial infections), which is prepared via the same (or essential the same) steps as instantly claimed (as well as via the same essential steps as US '330 above). This reference does not expressly teach oral or injectable formulations thereof.

It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to further utilize the extract preparation taught by the first Nagaoka reference (US '330) as an antibacterial agent (including within an oral or injectable preparation as disclosed therein) based upon the beneficial teachings provided the second Nagaoka reference with respect to the antibacterial activity such an extract provides, especially given that each of the extract preparations are prepared by the same, or essentially the same, steps (further, the references are by the same inventor). Accordingly, one of skill in the art would reasonably discern that a *Lentinus edodes* mycelium extract such as prepared by the steps taught by each of

the cited Nagaoka references would also effectively function as an antibacterial within the oral and/or injectable compositions taught by the first Nagaoka reference (US '330). The result-effective adjustment in conventional working conditions/parameters (e.g., providing such an extract within one or more conventional pharmaceutical formulations such as those instantly claimed and/or treating a particular type of bacterial infection - especially given that no demonstrated working examples have been provided within the instant disclosure with respect to treating a particular type of bacterial infection, including those instantly claimed) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan having the cited references as a guide. Please note that although not expressly taught, other recited claim limitations (e.g., the instantly claimed underlying functional effect - enhancing  $\gamma\delta$ T cell activity, and/or that the extract comprises approximate amount ranges of various ingredients therein) would be intrinsic to the *Lentinus edodes* mycelium extracts reasonably taught and/or suggested by the cited Nagaoka references

Thus, the invention as a whole is *prima facie* obvious over the references, especially in the absence of evidence to the contrary.

Claims 24, 25, and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugano et al. (US 4,461,760) and Nagaoka (US 6,090,615).

Sugano et al. beneficially teach an anticancer/antitumor composition comprising an LEM extract prepared via the same or essentially the same steps including a step of hydrolyzing/delignifying the mycelia via exposing the solid medium to enzymes existing within the mycelia medium suspension (such as those instantly claimed - e.g., protease, cellulase, glucosidase)

which was orally administered via injection to rats (in solution form, whereby LEM powder was dissolved in 0.9% salt water - please note that such a solution would be suitable for oral administration as instantly claimed) having chemically induced tumors, whereby the LEM increased the survival rate of the rats as well as reduced their tumor growth rate (see entire document including, e.g., col 2, line 48 - col 3, line 15, *per se*; col 4, line 44 - col 5, line 68; Figures 2-3, and Tables 4-5: with respect to the preparation and *in vivo* use of LEM, *per se*). Please note that although not expressly taught, other recited claim limitations (e.g., the instantly claimed underlying functional effect - enhancing  $\gamma\delta$ T cell activity, and/or that the extract comprises approximate amount ranges of various ingredients therein) would be intrinsic to the LEM extract taught by Sugano et al.

The US '615 reference teaches a *Lentinus edodes* (also known as shiitake mushroom) mycelium (hyphae) extract which is prepared via the same (or essentially the same) steps as instantly claimed, as well as pharmaceutical, drink, oral (food) formulations thereof, and a method of treating tumors therewith (see, e.g., col 1, lines 30-44; col 2, lines 25-63; col 3, lines 6-68; and Example 1, Comparative Examples 1 and 2, Example 4, Comparative Examples 3-4). The US '615 reference also expressly teaches that the extract composition shows excellent antitumor effects (especially including extract preparations prepared by either of the first two methods disclosed within US '615 - which do not require, or do not necessarily require, the presence of *B*-1,3-glucanase therein); and further that not only can the enzyme *B*-1-3-glucanase be used but also enzymes derived from the mycelium in preparing an extract with anti-tumor activity (see, e.g., Abstract; col 4, lines 41-45; col 8, lines 44-51; col 10, lines 24-47).

It would have been obvious to one of ordinary skill in the art to treat a tumor in a subject in need thereof via administering an effective amount of a *Lentinus edodes* mycelium extract which is prepared via the instantly claimed steps based upon the beneficial teachings provided by the cited references with respect to the anti-tumor activity such an extract provides. The adjustment of particular conventional working conditions (e.g., using a particular type of rice bran within the fungal culture medium, adding additional enzymes to the medium solution -as beneficially disclosed by US '615, and/or administering such a composition via conventional routes such as those instantly claimed) is deemed merely a matter of judicious selection and routine optimization which is well within the purview of the skilled artisan.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 24-30, 32, and 34-38 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,919,081. Although the conflicting claims are not identical, they are not patentably distinct from each other because both are drawn to methods of enhancing the immunity of a subject in need thereof, including treating a tumor in a subject in need thereof, via administering the same or essentially the same *Lentinus edodes* mycelium extract preparation thereto. The only apparent difference between the instant claims and those of US '081 is the underlying target immune cells to be enhanced - i.e., the instant claims are drawn to enhancing the activity of  $\gamma\delta$ T cells (which are cytotoxic cells) activity, whereas claims 1-8 of US '081 is drawn to enhancing the activity of LAK cells (which are lymphokine activating killer cells). However, since both sets of claims are also drawn (and disclosed as defining) treating a tumor in a subject in need thereof, the instantly claimed underlying functional effect and the underlying functional effect recited in the US '081 claims would intrinsically occur upon the administration of the *Lentinus edodes* mycelium extract preparation defined by the instant claims and the US '081 claims, especially given that the extract preparation is prepared via the same or essentially the same process steps. Further, the administered extract preparation instantly claimed encompasses and/or is encompassed by the administered extract preparation defined by the US '081 claims.

Art Unit: 1655

With respect to all of the art rejections cited above, it should be noted as a general statement that the patentability of a product does not depend upon its method of production (including claims drawn to a method of using a product-by-process, whereby the method of using is the same or similar to that of the prior art). If the product in a product-by-process claim is the same as or obvious from a product of the prior art, then the claim is unpatentable even though the prior art product was made by a different process (e.g., using defatted rice bran vs. undefined rice bran - although the use of defatted rice bran in conjunction with bagasse for making LEM is notoriously well known in the art: as evidenced, e.g., by Mizoguchi et al., 1987 and US Patent No. 5,283,239 - which are cited in the enclosed PTO-892 Notice of References). In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). Once the examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product (including within claims drawn to a method of using a product-by-process, whereby the method of using is the same or similar to that of the prior art). In re Marosi, 218 USPQ 289, 292 (Fed. Cir. 1983). The Examiner may make a rejection over such claims under 35 U.S.C. 102 and/or under 35 U.S.C. 103 (as set forth above).

In addition, to hasten prosecution (as well as to avoid any potential future Restriction requirements), it is strongly suggested that the claims fully and completely define (i.e., be limited to) a singular method of use in response to this Office action.

### **Conclusion**

No claim is allowed.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher R. Tate whose telephone number is (571) 272-0970. The examiner can normally be reached on Mon-Thur, 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terry McKelvey can be reached on (571) 272-0775. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Christopher R. Tate  
Primary Examiner  
Art Unit 1655